



Resource Model Distribution

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Distributed Resource Model Purpose



Functional Requirements

- **Distribute Scheduling Data Between Resource Models**
 - Geographically Distributed IST's And ICC's
 - Heterogeneous Network
- **Extensible To Many Users**

Risks To Mitigate

- **Performance Could Be a Problem**
 - Resource Model Is Central To Planning and Scheduling System
- **Do Not Want Single Point Of Failure**

Planning & Scheduling Process Architecture

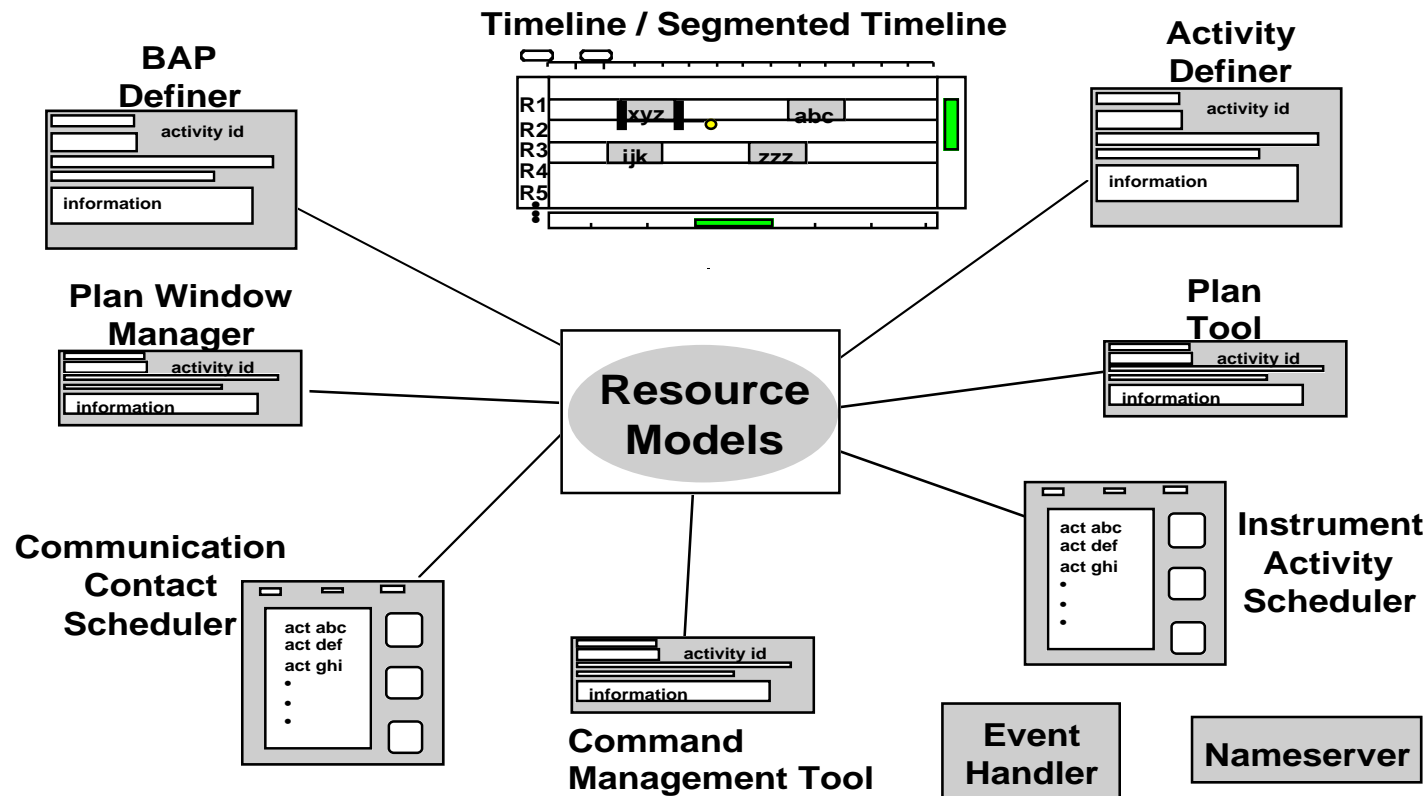
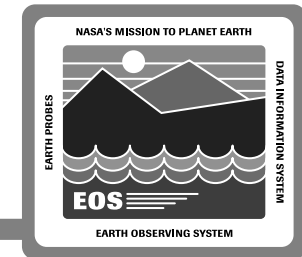


Figure 2-1. P & S Architecture

Distributed Resource Model Approach



Prototype/Study Three Architectures

- **Single Resource Model**
 - Centrally Located at the EOC
 - All Tools (Timeline, Scheduler) At All Sites Connected to the Central Resource Model
 - Single Point-Of-Access To Database
- **Single Master Resource Model, Multiple Slaves**
 - Spoke-Like Architecture
 - Single Point-Of-Access To Database
- **Multiple Resource Models**
 - One Per User
 - Additional Data Distributor Process
 - Only Purpose To Distribute Scheduling Messages
 - All Resource Models Obtain Data From Database

Single Resource Model Results



Small Scale Test on Existing Code

- 10 Users Representing All AM-1 Groups
- Client Processes Had To Wait Indefinitely - Timed Out

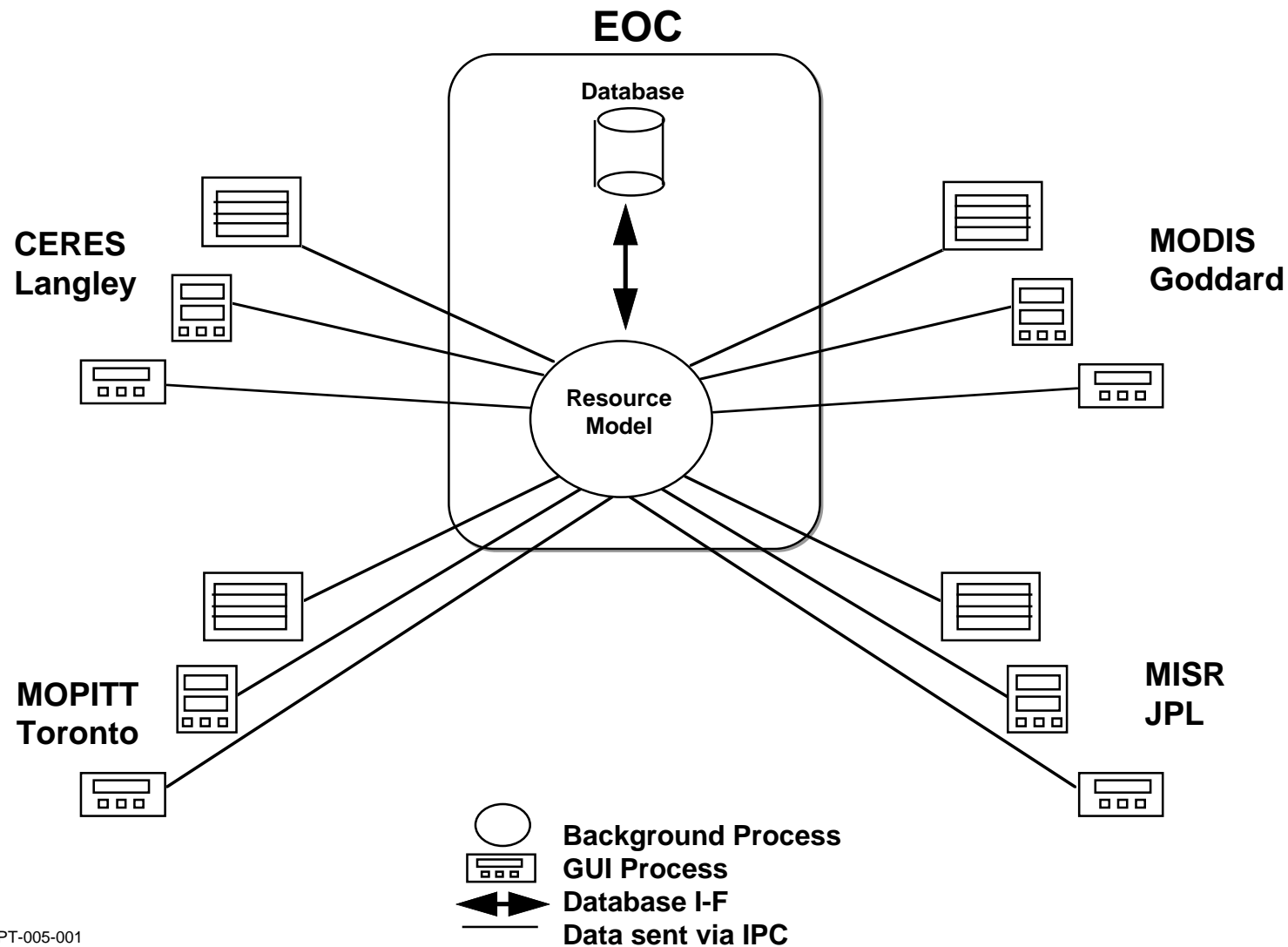
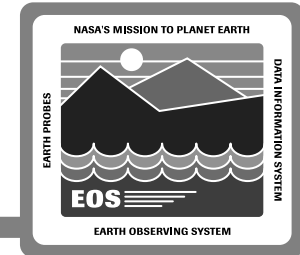
Advantages

- Simplest Design, No Additional Coding Needed
- Quick Database Access (Local - EOC)

Disadvantages

- Single Point of Failure
- Single Resource Model Could Not Support Load
- Limits Number of Clients

Single Resource Model Diagram



Master-Slave Architecture Results



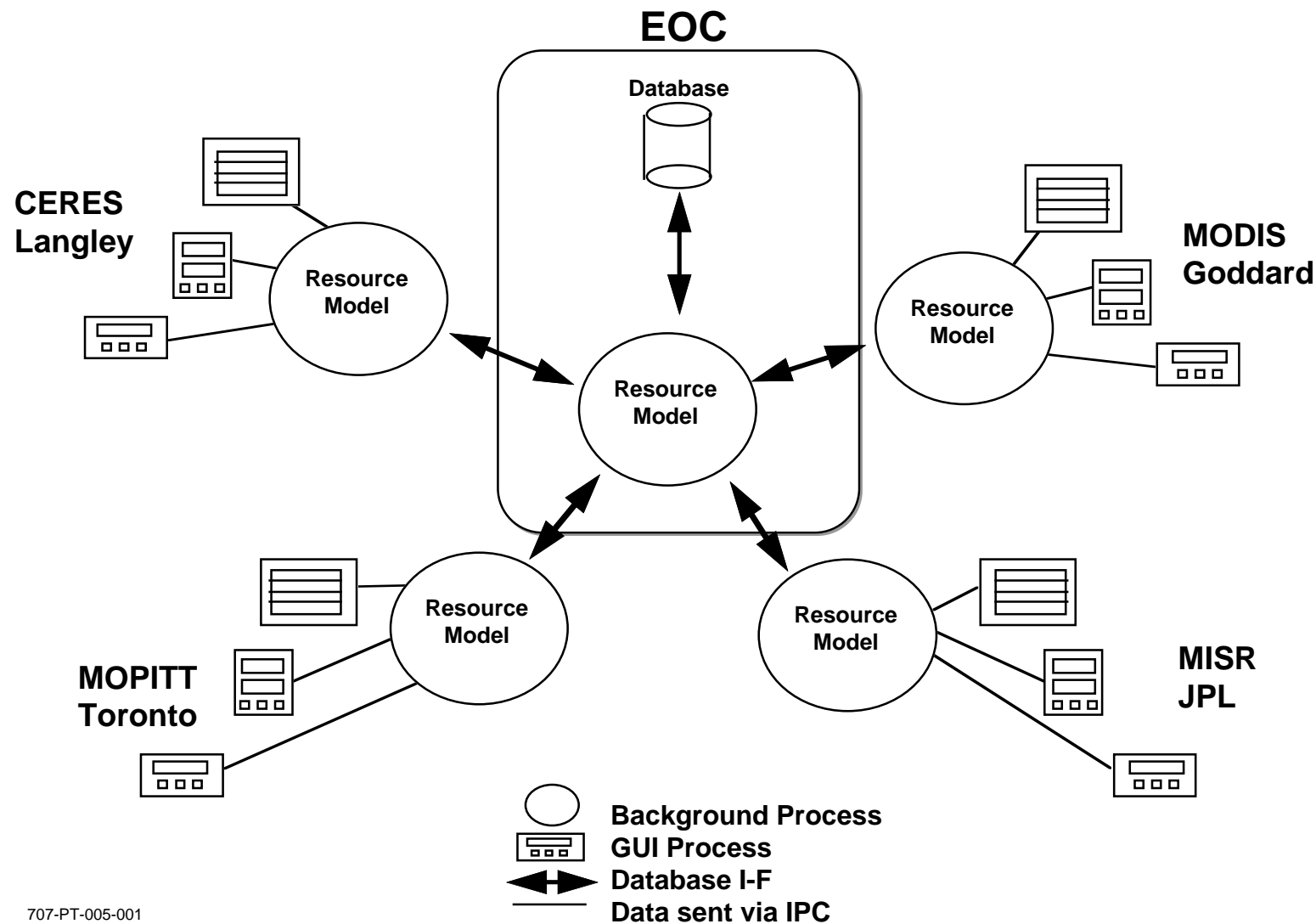
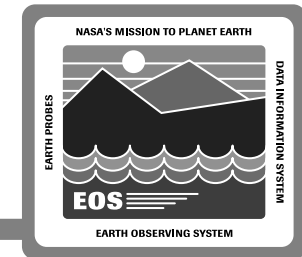
Advantages

- **Scheduling Load Distributed Among Many Processes**
- **No Additional Processes**
- **Quick Database Access (Local - EOC)**

Disadvantages

- **Single Point of Failure**
- **Complex Design**
- **Distributing Scheduling Requests Slows Down Process**
- **Requires Additional Code**

Master-Slave Architecture Diagram



Data Distributor Architecture Results



Advantages

- **No Single Point of Failure**
- **Design Heritage**
 - **Used on Program With 60-100 Users**
- **Resource Model Free from Distribution Duties**
 - **Client Processes Get Quicker Response**
- **Unrestricted Distribution Architecture**

Disadvantages

- **Additional Process**
- **Requires Additional Code**

Data Distributor Architecture Diagram

